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ABSTRACT

This report discusses the scope for and feasibility of introducing automated systems into the Botswana National Library Service (BNLS). The study was undertaken at the request of BNLS and was conducted by an outside consultant who interviewed staff, read internal documents and reports, and studied patterns of work. Topics of the report include: (1) the library's background, purpose, current objectives, current computer facilities, staffing, and capacity for utilizing automated systems; (2) constraints on the development of automated systems, such as the lack of development and staff skills at remote library branches and the lack of funding for operating expenses; (3) the strategic significance of automation, which would facilitate key activities, allow for the development of a national database based on the MARC format, and improve information sharing at the governmental and parastatal levels; (4) the technical, legal, social and economic feasibility of automation; (5) additional applications for an automated system; (6) considerations involved in selecting equipment and a supplier; and (7) capital budget items and projected recurrent expenses. A copy of the consultant's schedule in Botswana, a list of persons consulted, and a job specification for a systems manager are appended. (KRN)

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Technical Report
PP/1990-1991/II.C(i)

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Computerization of the Botswana National Library Service

by Peter C. Underwood

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Paris, 1991

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B O T S W A N A

COMPUTERIZATION OF THE BOTSWANA NATIONAL LIBRARY SERVICE

by Peter G. UNDERWOOD

Report prepared for the Government of Botswana by the United Nations Educational, Scientific and Cultural Organization (UNESCO)

U N E S C O

Technical Report
PP/1990-1991/II.C(i)
FMR/CII/PGI/91/106(Underwood)

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ABSTRACT

This report discusses the scope for, and feasibility of, introducing automated systems into the Botswana National Library Service (BNLS). The study was undertaken at the request of BNLS. An outline specification for a system is described, together with suggestions for applications and associated activities.

Summary of conclusions and recommendations

- The Botswana National Library Service (BNLS) would benefit from the introduction of automation, initially to facilitate the work of the Bibliographic Services Division and the production of the National Bibliography, word-processing for administration and on-line information retrieval for the National Reference and Special Libraries Division. However, no project should be initiated until the provision of sufficient additional resources to cover the running expenses of an automated system has been agreed.

- The purchase of a modular automated library system, initially offering acquisitions and cataloguing, and capable of being expanded from four terminals up to ten is recommended. The system should support multi-tasking and multi-user working. The system produced by IME (TINLIB) offers suitable facilities and it is recommended that this be carefully considered. It is also recommended that the system offered by McDonnell Douglas (URICA), which is widely-used in Southern Africa, should also be considered. Two additional microcomputers with associated printers, modem and suitable software should be purchased to facilitate word-processing and online information retrieval.

- The system supplier should ideally have a permanent base in Botswana or Southern Africa and must be able to provide, or arrange, training, software maintenance and hardware maintenance.

- A suitable professional librarian should be selected and trained as a 'Systems Manager' to manage and administer the project.

- Close cooperation with the Library of the University of Botswana should be sought, especially with regard to their plans for retro-conversion of the catalogue.

- Libraries in government departments and associated parastatal institutions should be encouraged to use similar systems to that chosen by BNLS.

- A suitable forum for discussing the possibility of a cooperative venture in creating a union catalogue/shared database should be established by BNLS. Membership should include representatives from BNLS, the University of Botswana, the Botswana Polytechnic and other organizations having significant collections of library materials.

List of abbreviations

ASCII	American Standard Code for Information Interchange
BNLS	Botswana National Library Service
DSE	German Foundation for International Development
GCB	Government Computer Bureau (Botswana)
IME	Information Management & Engineering Ltd - suppliers of TINLIB system
ISBD	International Standard Bibliographic Description
LAN	Local Area Network
MARC	Machine Readable Cataloguing
NCC	National Computing Centre (United Kingdom)
NDP VI	National Development Plan VI of the Republic of Botswana, covering the period 1985-1991
OPAC	Online Public Access Catalogue
SAMARC	Machine Readable Cataloguing (South African version)
SIDA	Swedish International Development Agency
TINLIB	The Information Navigator Library - integrated software package supplied by IME Ltd
UK	United Kingdom
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIMARC	Universal Machine Readable Cataloguing - a format for machine-readable bibliographic data which standardizes the various national versions such as SAMARC
X-25	An international telecommunications standard
WAN	Wide Area Network

Introduction

1. The Botswana National Library Service (BNLS) was founded in 1968 as a result of the National Library Service Act passed by Parliament in 1967[1]. It is the legal deposit library for material published in Botswana, publishes the National Bibliography of Botswana and has formed a 'Botswana Collection', housed in its headquarters in Gaborone and partly replicated in regional public libraries. It has established a network of public libraries and village reading rooms, supplies materials and staff to colleges and some schools and has responsibility for staffing and advising on the development of government libraries. It is also regarded as the source for advice on the development of library and information services in parastatal and other organizations. The only major library not, to some degree, under its control is that of the University of Botswana.

2. During the later 1980's the senior management became increasingly aware of the difficulties of administering a large library network, spread over a region of 582,000 km^2, coupled with problems of an increasing workload at the headquarters. In addition the senior management of BNLS was often asked to advise on the prospects for automation of library and information services in government libraries. In the absence, at that time, of staff with the appropriate skills to guide such developments and to advise on the feasibility of introducing automation at BNLS, the senior management approached the United Nations Development Programme (UNDP) for funding and assistance with establishing a project to review these matters.

3. In November 1990 the Consultant was invited by UNESCO to undertake a mission to Botswana to prepare a feasibility study of the computerization of BNLS. After some negotiation over dates and other arrangements, a contract was agreed in February 1991. The mission was carried out from 23 April 1991 to 8 May 1991 and was funded under UNESCO's Participation Programme for 1990-1991.

4. The Terms of Reference, as listed in the contract, instructed the consultant to proceed to Gaborone and prepare, in close cooperation with UNESCO and the appropriate national authorities, a detailed feasibility study of the computerization of the Botswana National Library Service. In particular, to:

a) assess the needs of the Library in terms of hardware, software and personnel;

b) assist the national authorities in the preparation of technical specifications to facilitate the selection and phased installation of computer facilities within the Library;

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1. Republic of Botswana. The laws of Botswana, rev. ed., 1987. Chapter 58.02: The National Library Service.

c) recommend detailed staffing and staff training and development requirements for the professional, technical and support personnel of the Library in the new computer-based environment;

d) draw up a project document incorporating budget estimates and implementation timetable.

5. The mission schedule is outlined in Annex 1 and Annex 2 lists the persons met and consulted during the mission.

Procedure

6. Automation of any activity is a complex process because of a need to design a system which allows the users, who are imaginative, intuitive and flexible, to work with a machine which is inherently inflexible, remorseless in its logic and deterministic in its action. An information system is especially difficult because of the many ways in which users may want to work with its contents and because of the 'client' relationship which information workers seek to develop with information service users. This relationship lays stress on personal service, integrity and on the high quality of the response to user needs. A machine must, then, be viewed as an adjunct, a tool, and not as the centre of the service.

7. These considerations suggested the need to conduct the feasibility study using 'soft' analysis techniques, which facilitate a detailed consideration of the human elements of both the existing and any proposed system. The human activity system forms the core of the study; a position analysis is the preliminary step. This focuses on the mission of the organization, its strengths and weaknesses, and the opportunities and threats which are present in its sphere of activity. Next follows a study of workflow, where attention is focused on those areas which would best facilitate progress towards achieving the objectives of the organization. What emerges is a view as to the feasibility of automation which, because it has emerged from the collective views of information workers, is likely to be representative of their objectives and not solely the view of an analyst. This procedure also reduces the potential for conflict and misunderstanding: staff are involved with the study from the beginning and have an opportunity to discuss and comment on findings as the work proceeds.

8. Accordingly, much of the time of the consultant has been spent in interviewing staff, reading internal documents and reports and studying patterns of work. Two conferences with staff were held to promote discussion and a preliminary half-day training course on computer applications in libraries was held to provide a 'refresher' for senior and middle-management staff.

Background and position analysis

9. The National Library Service Act charges the Minister of Labour and Home Affairs with the responsibility of offering a comprehensive and efficient library service by providing buildings and equipment sufficient to meet the general requirements of adults and children and securing cooperation between persons supplying library facilities in Botswana.

10. The Botswana National Library Service (BNLS), set up under this Act, has sought to meet this responsibility by developing several services. The overall objective of BNLS, as stated in an Organization and Methods review of 1985 and accepted by Government and the BNLS, is to 'promote reading and provide reading material to the public for increase of knowledge, recreation and self-development'[2]. This broad statement is then broken down into several, more specific, objectives:

'a) assisting in developing sound library services related policies and legislation, and ensuring uniform application of the approved policies and legislation;

b) providing library services to all parts of Botswana;

c) making library services accessible to all members of the community for the purposes of education, recreation, self-development and information;

d) developing and promoting a national bibliographic control system and services;

e) promoting reading and providing reading materials;

f) acquiring and preserving documented material of national, historical, research and educational value;

g) serving as a focal point for coordinating efficient management of operational records within Government;

h) conducting appropriate research and evaluation programmes in the areas of library services;

i) developing, coordinating and maintaining professional level library services, standard systems and practices, to ensure most effective service to the public and Government as appropriate;

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2. Republic of Botswana. Directorate of Personnel Office of the President. O & M Review. Report on ministerial organisation review: Ministry of Home Affairs (overall) - final report (Ref DP20/14/4), June 1985. Annex XI.

j) providing professional advisory services to public and private organisations in the field of library services;

k) ensuring that the Department is efficiently managed and all resources allocated to the Department are effectively and optimally utilised.'[3]

These specific objectives are then broken down into a set of major functions, which include:

'to provide national leadership and professional competency on all matters pertaining to libraries . . . '

and

'developing an efficient system of information storage and retrieval . . . '

and

'to maintain union catalogues to facilitate resource sharing within and outside the country . . . '

and

'to offer professional and technical advice to both public and private institutions in matters relating to library and for purposes of uniformity.'[4]

11. Since its foundation in 1968, the BNLS has sought to achieve these objectives by the strategies of developing a network of public libraries based on the districts of Botswana, the production of a national bibliography, the development of a national collection relating to Botswana and the supply of trained staff to other institutions such as the developing libraries of Government ministries. It has also coordinated training courses and seminars aimed at developing a national information policy. It has received funds from the Government and also major grants from bodies such as the Swedish International Development Agency (SIDA) and the British Council. The development of a network of village reading rooms and the promotion of literacy and reading through its support of libraries in schools and colleges point to its continuing efforts to achieve the objectives set for it by the Government.

12. Recently, progress has slowed. The National Development Plan VI (NDP VI), covering the period 1985 to 1991, included targets for expansion of the public library network, the service to schools, colleges and village reading rooms and improvements in buildings and other facilities. Progress in achieving these targets has been severely hampered by a lack of money and a lack of skilled personnel. The Minutes of the Board of the BNLS frequently record its concern that the financial and manpower ceilings are too low and that this has hampered attempts to provide an adequate service.

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3. Ibid.

4. Ibid.

13. The effect of the financial ceiling is especially marked. Moore, in his report on library and information manpower needs[5], drew attention to the small amount of money being spent on new stock. He recommended that by the end of NDP VI the proportion of total recurrent expenditure to be spent on books and other materials should be 25%. Progress towards this target has been slow. By the financial year 1986/87 the proportion spent on stock had risen to 6%. The major item of expenditure is salaries. Because the cost of library materials imported or bought in Botswana continues to be high more money will be needed if the service is not to deteriorate.

14. The staffing ceiling has an effect on BNLS in two ways. At the headquarters in Gaborone the delays in processing and clerical matters can be quite severe. It took three months to type camera-ready copy for a cumulative issue of the Botswana National Bibliography (volume 18)[6], for example. The problem was caused by staffing changes in the typing pool, suggesting that there was not sufficient capacity to cope with the disruption caused by reallocation of staff. A second effect is the loss to headquarters when trained personnel have to be temporarily allocated to duties in the Government libraries for which BNLS holds the staffing responsibility or when staff are absent on extended leave for training and education. Their absence is apparent as some tasks are neglected and backlogs develop. The overall effect is of a service spread very thinly and only just managing to cover the basic activities of a national library service.

15. There are signs, potentially serious, that in one area BNLS is working at, or beyond, its capacity. The workload of the Bibliographic Services Support Division is recorded in the statistics of items processed, re-allocated and withdrawn. Over a period from 1987 these statistics display a distinctive pattern of fluctuation. In some months new books have been processed, in others many older books have been withdrawn. In some months the work of the Division has declined to a level well below its average. The cause becomes evident when the reports accompanying the statistics are read: shortages of staff adversely affect the work capacity of this Division very greatly. Periodic 'blitzes' are recorded as the staff of the Division, together with others, are diverted to cope, for example, with an accumulation of items awaiting withdrawal. Some of the problems can, in the past, be attributed to a lack of work space and disruptions caused by alterations to the building but the underlying problem has continued after such work has been concluded. Because this Division lies at the heart of the work of BNLS, the overall effect on the service offered to users is severe and widely distributed.

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5. Nick Moore, Library and information manpower needs: a study of the situation in Botswana (London: British Council, March 1984).

6. Minutes of the 63rd meeting of the Botswana National Library Service Board, June 1987. Item 7.3.2.

It would take very little more pressure on this Division for the queue of work awaiting processing to become unmanageable.

16. A study of workflow in the Bibliographic Support Services Division reveals that there are several 'bottlenecks' which can quickly reduce the output of the Division. These bottlenecks consist of clerical processes, in particular the clerical tasks of typing of stencils and repetitive typing of catalogue cards, the reproduction of catalogue cards using a stencil duplicator, and the frequent checking of stencils and card sets by professional staff. The absence, in particular, of the appropriate professional staff has a marked effect on output. Quality control is a vital feature of the work of this Division and the present system is especially susceptible to error: it would not be easy to adjust the present manual system to achieve a greater throughput unless extra staff (not necessarily professional-level) are trained to take on some of the work of checking and improved coordination of staff is introduced.

17. Even if this could be done there is a proposal, the effects of which could overwhelm the Division. At present the processing of books and other materials for use in schools and community colleges is undertaken largely by those institutions. The new National Development Plan proposes that this processing be undertaken centrally by BNLS. The volume of material is estimated at 36,000 items a year by 1995. At present, the mean daily output of the Division is 110 items (a combination of processing new items, re-allocation and withdrawals); over a year of 250 working days this represents 27,500 items. Without extra staff and radical reorganization the result of adopting this proposal would be a complete overload of the Bibliographic Services Division.

18. Projects of wider significance have also fallen into abeyance. The provision of a union catalogue is regarded as being a major function of BNLS. The importance of this function was emphasized by the Director of BNLS in 1989 where, in a mid-term review of progress on achieving the targets set for NDP VI, the Director called for the establishment of a union catalogue to be included in the Plan. At the same time the Director acknowledged that lack of finance, staffing and suitable accommodation would hinder the implementation of the project[7].

19. The development of a national information policy is another project for which a need is both apparent and acknowledged. The information needs of any country multiply as its economy becomes more active and as the population increases and becomes more sophisticated in its demand for education, health and welfare services and access to the political system. Isolated communities are gradually linked together as the infrastructure of transport and communications develops. It is at this point that some attempts at coordinating the developing information services must be made if resources are not to be wasted in duplication and if opportunities are not to be lost because information is not made

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7. Report of the Director to the 66th Meeting of the Botswana National Library Service Board, 22nd March 1989. Item 8.

available to the right people, in the right place and at the right time. In 1987 the BNLS played a major role in organizing a seminar, sponsored by the German Foundation for International Development (DSE), aimed at exploring the development of such a policy for Botswana. The foreword to the final report notes that there are several differences in the information scene in Botswana compared with other countries of Southern Africa: a strong Government interest in the potential benefits of a coordinated library and information network, the existence of a National Information and Documentation Coordination Committee and the constant allocation of financial resources towards the development of strong information establishments. The foreword continues, 'One is astonished that up-to-date, Botswana still lacks a coherent National Information Policy . . . '[8]. There is still no such policy though it is understood that further discussions about development are expected. Its absence has made it difficult for BNLS to provide authoritative advice on the development of government libraries and information services, the libraries of parastatal organizations and, in particular, to assist in the development of any strategy for resource-sharing and cooperation.

20. The use of computers to assist with the work of BNLS has been discussed by staff and by the Board of BNLS on several occasions. In particular, the development of databases, the use of word-processing and networking through telecommunications facilities have been mentioned but no study of needs was undertaken, prior to the approach to the United Nations Development Programme to fund the present project. Several of the senior staff are aware of the use of computers in libraries and information centres, and have attended demonstrations of systems in South Africa, at the State Library in Pretoria. They are also in close contact with the staff of the Library of the University of Botswana, where an integrated computer system is shortly to be implemented.

21. Computers are being used in several ministries and departments of the Government. A recent report, undertaken by the National Computing Centre (UK) at the request of the Government of Botswana, commented on this and drew attention to the dangers of poor quality, uncoordinated development; the report also observed that much of this development had not been notified to the central authority which had been set up to overview development: the Government Computer Bureau (GCB)[9]. The role of

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8. Lutz Hüttemann (editor), Establishment and management of a national information service in Botswana: report of a workshop held in Gaborone/Botswana from 23 to 27 February, 1987 (Bonn/Gaborone: German Foundation for International Development and Botswana National Library Service, 1987). Foreword, p. i.

9. Robertson, J. S., Consultancy on development of computer facilities in the Government of the Republic of Botswana: final report, April 1990. (Internal report for the Government of the Republic of Botswana, produced by the National Computing Centre, United Kingdom). Item 1.3.

the Bureau is to coordinate all computer activities and the report, the findings of which have been accepted by the Government of Botswana, recommended a strengthening of its role. In particular, it identified directions for development and suggested the need to determine whether any proposed new computer application is most suited to centralized, distributed or cooperative computer processing. Its guidelines for choosing centralized processing, using the mainframe services of the Bureau, for an application suggest that data sharing and the need to use telecommunications are important factors. For distributed processing the report identified suitable conditions as being where the computing power and data storage requirements could be met by available stand-alone equipment including Local Area Networks (LANs) and any communication requirements could be met by LANs[10].

22. The BNLS was invited to outline its computing requirements for inclusion in the report. BNLS identified administrative and bibliographic processing with the additional requirement of being able to link its branch libraries to form an information and data sharing network. The NCC report concludes that these requirements could be met by distributed processing based in the BNLS, except that the telecommunication links should operate through a microwave Wide Area Network (WAN) to be established for official, national, use by the Botswana Telecommunications Corporation and run by the Government Computer Bureau.

23. The NCC report includes comments on the overall hardware and software development policy. The need for a strategy to ensure there is stability for long-term development plans, particularly where these require the introduction of proprietary items such as database software, and the ability to maintain an efficient technical support service to distributed computer users, are identified as important components of the policy[11]. The report also concurs with the current GCB policy of using an ICL platform for their mainframe computing and recommending that any microcomputer used should be IBM-compatible, with Wordperfect and Lotus 1-2-3 as standard software packages[12].

24. Whilst this recommendation provides clear guidance for departments wishing to use word-processing, spreadsheet and simple database applications it leaves open a question which is beginning to concern BNLS: what advice should it give to those organizations wishing to

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10. Robertson, J. S., Consultancy on development of computer facilities in the Government of the Republic of Botswana: final report, April 1990. (Internal report for the Government of the Republic of Botswana, produced by the National Computing Centre, United Kingdom). Item 8.4.

11. Ibid., Item 8.6.

12. Ibid., Item 8.7

automate library activities? Without experience BNLS is not well-placed to provide authoritative advice yet its staff are aware that an important opportunity is starting to present itself. One way of beginning to establish a national information policy, in fact if not by statute, is to encourage the use of systems which are, at least, compatible. In this way, the prospect of sharing data through networking is improved and longer-term developments, such as the establishment of cooperative databases, are more likely to be possible.

25. Already there is a computer project, using a proprietary, integrated, library applications package (IME's TINLIB), in the early stages of implementation in the Library of the University of Botswana and some experience of a failed attempt to use the software package dBase IV at the Botswana Polytechnic. Because these two libraries represent major collections it is important that their paths of development and those of BNLS are compatible so that a cooperative venture can be developed which would enable data held in one system to be available to users of another. Such a venture, a linking of databases, would form a major source of information for many sectors of the economy, other information services and academics.

26. A further problem is the lack of staff knowledgeable in the use of computers. This is a problem not confined to BNLS or Botswana and the lack of staff with suitable skills is readily acknowledged by professionals in other libraries and information centres. It is, however, a problem which will gradually diminish, at least as far as Botswana is concerned, as students graduating from the University of Botswana, having taken the courses run by the Department of Library and Information Studies, begin to occupy senior and middle-management positions in libraries and information centres. In the short term, however, these skills are not strongly represented on the establishment of BNLS, so there is no focal point for project development.

27. A strength is the recognition by the Ministry of Labour and Home Affairs and the Government Computer Bureau that the introduction of automation could form an important strategic element in the development of BNLS and the coordination of national information services. It is understood that a sum of 1 million Pulas (1 US$ = 2 Pulas) has been earmarked for the capital budget of a project should a satisfactory case for its use be made. It is also understood that running costs for a system will have to be borne by those services using the system.

28. A further strength is the awareness of senior staff of the need to take action to improve matters. There was no evidence that staff viewed the prospect of automation with reluctance, though it is fair to say that many are apprehensive about their capacity to respond to such a change. Moreover, they are realistic about the time and effort that will be needed to introduce a satisfactory system.

29. To summarize the position analysis,

the STRENGTHS are:	realistic staff attitudes; money 'earmarked' for the capital budget of an automation project.
the WEAKNESSES are:	low financial ceiling resulting in a high proportion of recurrent expenditure being attributed to staff costs and a consequent reduction in funding for the purchase of library materials; low staff ceiling resulting in an inability to absorb extra workload; a labour-intensive materials processing system needing extensive supervision by senior staff; the lack of a national information policy to coordinate the development of information services; lack of staff knowledgeable about the use of computers in library and information services.
the OPPORTUNITIES are:	the need to develop a union catalogue which could provide a focus for cooperative activity between libraries and information centres; the development of the Wide Area Network thus providing a development path for linking many of the service points of BNLS; the need to provide advice on the development of automated library or information services in government and parastatal organizations; the automation project already under way in the Library of the University of Botswana which could, with a similar project at BNLS, provide a platform for a cooperative venture.
the THREATS are:	the proposal to centralize materials processing for school and community colleges at BNLS headquarters, which would overload the existing system to an intolerable extent; the beginnings of uncoordinated development of automated activities by library or information services in some government departments and parastatal organizations.

Constraints

30. The environment in which the services provided by BNLS are used is an important consideration when contemplating change. Gaborone is a modern city with good communications and an infrastructure which can support modern technology. It is understood that other major towns are not in such an advanced state as Gaborone but that major improvements in the infrastructure are being carried out or are planned. Many service points of BNLS are, however, in regions remote from these areas of development. They are usually staffed by library assistants with basic qualifications appropriate to running a service using simple administrative procedures. The service points have a stock for use by adults and children covering fiction, non-fiction, in Setswana as well as English, and basic reference books. A small stock of periodicals and newspapers is displayed. The provision of reference services is very limited and loans are low. The library often has an important function as a reading room. Many branches are, by force of circumstances, more-or-less self contained and the main function of BNLS headquarters in relation to such branch libraries is to supply processed, or partly-processed, stock train staff and deal with the occasional reference enquiries which have been passed on from a branch. The notion of an interactive network, with libraries contacting each other, interlending stock and cooperating over reference or other enquiries is still some years away for Botswana.

31. A major constraint, then, on development of automated systems is that automated systems would either not be necessary or could not be run in many of the branches. It would certainly be difficult to justify using an automated circulation control system, even at the busiest branch: the highest average issue rate per day for Gaborone was only just over 100 issues a day. The remainder of the nineteen branch libraries and the sixteen mobile library sites have issue rates well below this figure.

32. Similarly, there is no need for automated assistance with the simple records for serials which are kept by branches. No branch has a very extensive stock.

33. Catalogues in branches are maintained on card, with author, some title entries, and classified subject entries with an alphabetical subject index. No study of catalogue use has been made but anecdotal evidence suggests that the rate of use, even by staff, is low. The view of senior staff at BNLS headquarters is that catalogues should, nevertheless, continue to be provided at all branches. In this case, any automated system would have to be able to produce catalogue information in a hard copy form even if other forms of output, such as an Online Public Access Catalogue (OPAC), were to be used at BNLS headquarters or major branches such as Gaborone City and Francistown. The continuing use of a catalogue in card form at most branches is best because they are robust and fairly simple to maintain. The number of additions and withdrawals necessary in branch catalogues is a reflection of the number of stock movements and these are quite small, being about 100 a month for

small branches and rising to about 200 a month for the larger branches. Other forms of catalogue would be possible, of course, and some could offer additional features such as providing locations of material held in other branches. Such forms would present significant problems of use, however. Computer Output Microfilm would not be suitable as a medium for all branches because of the need to supply, power and maintain microfiche readers, whilst a book form of catalogue, reproduced from pages printed out from a computer system, would be expensive to replicate, especially if frequent cumulations were needed.

34. Another constraint emerges from a consideration of the skills of the staff. There is no one in the staff of BNLS headquarters who has detailed experience of implementing and running an automated system. This need not, in itself, be an insuperable problem: clearly it would be possible to recruit a suitably skilled information professional to work as a 'systems manager'. It does, however, suggest that the staff of BNLS headquarters would need considerable support and that they would not be well-advised to consider a novel approach or commit themselves to a system for which there is no support facility or body of expertise available locally.

35. Staffing offers a further constraint. It is unlikely, given the economic climate in Botswana, that the ceiling on staffing will be raised and, indeed, this seems to be a tenet of the new National Development Plan, NDP VII. An automation project will, therefore, have to be run by the existing complement of staff with the possible addition of a systems manager. Although an automated system would eventually reduce the amount of repetitive, routine, clerical work, which forms such a large element of the present system, its implementation will have a disruptive effect until staff are familiar with its workings. This is unavoidable but does highlight the need to consider carefully to what extent BNLS staff can absorb the additional workload a new system will, at the beginning, represent.

36. The availability of capital financing for a project has been noted as a strength. The 'earmarked' money would pay for capital costs but BNLS would still have to fund running expenses which would include:

software and hardware maintenance - typically 12% to 15% of capital costs;
consumables - a direct cost related to volume of processing;
telecommunications charges, if branches were connected to BNLS headquarters - a direct cost related to volume of transactions;
insurance cover for damage to the system and for loss of data.

Additional costs would be staff training and, depending on the policy of the Government of Botswana, depreciation charges. In addition, heavily-used equipment, such as terminals, might need replacement after two or three years and the complete system after seven to ten years. It is not

possible, at this stage, to assess with any accuracy what the running costs might be but it is clear that any charge would have a substantial impact on the allocation of resources of BNLS. It would serve to compound the problem of under-funding of stock purchasing and it is difficult to see any scope for making savings elsewhere within the envelope of resources. There is certainly no scope for saving on staffing in the short term and, if plans to centralize processing for schools and community colleges are realized, there will be little possibility of making savings in this area in the future.

Strategic considerations

37. At first sight BNLS is not a very suitable candidate for automation because of its under-funding. It is also evident that BNLS has arrived at a point which will be crucial to its continuing development. Without urgent attention to its systems of processing it will not be able to accommodate an extra workload and may experience continuing difficulty in coping with the present workload. Automation can offer a means of dealing with the problems of workload and offer attractive possibilities for the provision of additional services to users.

38. It is evident that BNLS is not, at present, capable of achieving some of the aims and objectives described in paragraph 10.Specifically, it lacks the capacity to undertake the creation of a union catalogue and it is not able to act as a focal point for coordinating efficient management of Government records. In the former case this is because of a lack of resources to undertake such a large undertaking and in the second it is because of a lack of skill and experience. A small automation project could begin to remedy both defects.

39. The Bibliographic Support Services Division provides the core activities which underpin much of the work of BNLS. This Division is largely responsible for acquiring, cataloguing and distributing library materials to the BNLS branches. It is also a Division which is very susceptible to 'bottlenecks'. Delays in processing have an immediate effect on the speed of service to branches, a problem which is further compounded by the backlogs which tend to accumulate. Of all the activities undertaken by BNLS, at present this Division would have most to gain from automation and the effect of speeding up its work would have the greatest impact on all services of BNLS.

40. The production of the National Bibliography is also a key activity for a national library. The volume of records to be included is quite small, being about 300 a year. The delays in production are attributable to holdups in repetitive clerical work and there is clearly scope for reducing this problem. At present, camera-ready paper copy has to be supplied to the Government Printer. A recent development is the facility to supply formatted data on disc to the Government Printer so that computerized type-setting equipment can be used: this approach would be suitable for production of the National Bibliography.

41. To gain the fullest benefit from automated production of the National Bibliography its production should result not only in a printed bibliography but also in the development of a database, the contents of which can be exchanged with other divisions within BNLS, other institutions and national libraries in other countries. In this way BNLS can begin to develop a role as a centre for the exchange of bibliographic information for libraries within Botswana and can contribute to the development of exchange facilities within Southern Africa. Such a move predicates the use of a standard for the exchange of machine-readable bibliographic data, of which the Machine Readable Cataloguing (MARC) standard is the appropriate choice. Use of MARC will ensure that records can be freely exchanged and that records from other databases in MARC format can be 'downloaded' into a BNLS database.

42. There are many MARC formats from which to choose but within Southern Africa the wide-spread use of SAMARC, as a regional format, makes it the obvious choice. SAMARC is based on the UNIMARC, thus ensuring widespread compatibility with other MARC formats, and is suitable for describing a wide range of bibliographic and other media types. In addition, the family of MARC formats is under active development to incorporate newer media types.

43. The use of SAMARC could also make possible the downloading of bibliographic records already notified to the State Library in Pretoria, South Africa. It is understood that the Library of the University of Botswana is investigating the possibilities of mounting a retrospective catalogue conversion programme using records held in SAMARC format by the State Library. A feasibility study has yet to be carried out by the University Library; the results could well also be of importance to the BNLS. Should this approach prove possible, it will be important for BNLS to determine what proportion of its records would be available in machine-readable form, the amount of editing that might be necessary to make them usable within BNLS and the cost of acquiring and editing such records compared with the cost of keying-in bibliographic data afresh. Even if an attempt at obtaining records from the State Library proves abortive consideration should be given to obtaining records in MARC format from another source such as the British Library. Since much of the stock acquired by BNLS is from British publishers there is a strong possibility that many of the records needed will already be available on the MARC database of the BLAISE service from the British Library. Holdings information and other local information would have to be added by BNLS to such records and the costs of this would have to be determined. The development of such a database by BNLS would form a major part of a cooperative union database to which libraries of other organizations in Botswana could eventually contribute, thus helping to achieve the long-desired union catalogue and aiding the development of an inter-lending network.

44. There are attractions in improving the production process for catalogues. The present system of card production is prone to error, requiring frequent and repetitive checking of accuracy by senior staff, time-consuming and subject to 'bottlenecks' because the job is broken

down into several separate tasks which are allotted to a succession of people. If a person is away, backlogs begin to develop.

45. The apparent low rate of catalogue use in branches may be attributed to many factors and is probably a combination of several. In the various studies of catalogue use carried out in the United Kingdom and elsewhere the card catalogue has rarely proved popular with users. most of whom prefer a Computer Output Microfilm form or, latterly, the OPAC form. There is no reason to believe that users in Botswana would react differently though one might expect a higher degree of reluctance to use an OPAC at first because computers are still a fairly unfamiliar tool to them. Even so, the novelty of the approach and the attraction of new technology might well overcome a lot of this resistance, especially in the more sophisticated urban areas. One way of promoting a greater awareness of the utility of information is to make it easy to find and an automated library catalogue system would offer one means of doing this.

46. Automated catalogue systems, and OPAC systems in particular, can lead to a considerable expansion in the number and type of access points which can be used in searching. This is one reason why the OPAC form of catalogue seems to be favoured by staff and users. Incomplete and only partly-correct information can be used and will often yield a useful result. Users are encouraged by this and can become more adventurous in their searching, thus expanding their knowledge of the breadth of the stock and encouraging a more purposive use of information.

47. There are also attractions in improving the access users have to the stock, although the benefits of this would not be felt until users and staff came to use the catalogue more and interlending of stock between branches became a practical possibility. The development of a union catalogue for the public library system would be an easy step to take with an automated system.

48. The real impact of an automated system at BNLS will not be in the ability to save money directly through reducing staff but, rather, in the ability to increase throughput without further increases in staff. Any system, manual or automated, needs a certain level of staff before it can offer any service at all and BNLS is operating close to that limit, at least as far as the Bibliographic Services Support Division is concerned.

49. The strategic significance for information sharing of the development of the libraries and information services in Ministries and parastatal organizations could be considerable. Without carrying out a detailed study of information needs within these various bodies it is impossible to be precise about what the configuration of automated systems should be. However, discussions with the staff of the Government Computer Bureau (GCB) revealed that a fibre-optic Local Area Network is being installed to link buildings within the Government Enclave and it is anticipated that a large database management system will be installed on the GCB mainframes to service the information-handling needs of departments and ministries. An ideal solution would be for all organizations to use compatible, or even the same, systems. However,

since their information needs are almost certain to be different and often highly specialized, this approach seems unlikely. Instead it would be preferable to re-define the concern of BNLS as being primarily that bibliographic information about the collections held in these organizations should be maintained in a common format and, if an automated system is used, the machine format for this data should be MARC. In this way the union catalogue/cooperative database objective will not be compromised.

50. Another aspect of the automation of the libraries of ministries and parastatal organizations is the type of equipment that should be used. Since BNLS is largely responsible for supplying staff to these organizations there would be benefits in recommending the use of similar systems at all sites. A comprehensive study is outside the present brief, but observation at the sites visited suggests that automation is not needed to cope with the workload, except at the Library of the Polytechnic of Botswana, so it would have to be justified on the grounds of providing access to improved services.

Feasibility

51. As far as technical feasibility is concerned the use of a computer to automate the work of the Bibliographic Services Division in acquiring stock and preparing bibliographic records is quite possible. In addition it is feasible to automate the input of records for the production of the National Bibliography and its subsequent output in a form suitable for computer typesetting.

52. It is also technically feasible to cumulate bibliographic records from this work to form a database. The catalogue records already being produced conform to first-level descriptions according to the International Standard Bibliographic Description (ISBD) for monographs and contain some elements of the second-level description, also. There should be no difficulty, then, in adapting the process to storing such descriptions in a MARC format or, indeed, in using MARC format descriptions from other databases.

53. The technical feasibility of linking libraries in other service points of BNLS is unknown. There is, at present, no working data transmission network to which BNLS could have access but the Government Computer Bureau is finalizing plans for an X-25 network to which BNLS could seek access. If BNLS specifies equipment which can support external data communications using this standard then such connections will be possible.

54. Similarly, the technical feasibility of linking the libraries in ministries and parastatal organizations is also unknown and cannot be decided until more details of the proposed LAN are available.

55. There are no apparent problems over legal feasibility other than copyright issues arising from the ownership of bibliographic records.

This is a difficult and uncertain area because there are no binding international legal agreements and quite different interpretations of the status of copyright in bibliographic records held on computers subsist in many countries. In effect, the problem is beyond the scope of present law and many countries have had recourse to making exchange agreements and contracts with those with whom they wish to exchange such records[13].

56. As far as social feasibility is concerned there is no reason to doubt that an automated system would be well-received by the staff concerned provided due care is taken to train them properly and adequate time is allowed for them to become accustomed to the inevitable changes in their jobs. The acceptability of a system to library users through, for example, an OPAC is unknowable without experiment but, if the experience of other countries is considered typical, then such developments will be acceptable and, indeed, popular.

57. It is the area of economic feasibility which must cause doubt. Specifically, if no extra, and continuing, provision for running expenses for an automated system can be made in the annual grant to BNLS then the project cannot be considered viable. It is also important that any subvention to cover running expenses is not given at the expense of cuts elsewhere in the support of BNLS and that attention is given to the need to plan for eventual system replacement.

58. The argument for automation is thus based on improvement in existing services, a greater capacity to absorb an increased workload without a proportionate increase in staff and the strategic importance to Botswana of developing a cooperative database for sharing and acquiring bibliographic and other information. The benefits of this will not be immediate and it is consequently difficult to put a cash value on them.

A way forward

59. It is evident that some aspects of the work of BNLS could benefit from automation. The most pressing problem is with the work of the Bibliographic Services Division and this is the preferred activity with which to begin automation. When commencing automation many library services have started with sections covering similar activities to those of the Bibliographic Services Division. In addition, the requirements are well-defined, there are standards which can be applied and several suppliers provide systems which can handle the range of activities necessary to support the work of this Division.

60. This automated system should also be used for the work of preparing the National Bibliography. Here, again, the pattern of

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13. A fuller discussion of the problem is given by Ellen Gredley and Alan Hopkinson in Exchanging bibliographic data: MARC and other international formats (London: Library Association, 1990), pp. 231-237.

activity is well-defined and the need for standardization is well-understood. There are plans to amend the Copyright Deposit Law to bring other published media within the scope of the Act; this will increase the number of entries in the National Bibliography considerably. An automated system offering a MARC format for bibliographic records, together with facilities for output onto floppy disc in a suitable format (Wordperfect if possible; failing this ASCII) will enable quicker production of the Bibliography and facilitate the development of a machine-readable database of bibliographic records.

61. There is clearly scope for further development in the use of automated systems in BNLS, especially if the use of the public library network increases. For the moment there is no justification for using automated circulation control, or serials management. There would be benefit, though, in using an automated system to assist with some of the administrative tasks such as preparation of statistics and reports. As an adjunct to the automated system, the provision of word-processing and spreadsheet facilities would be of considerable assistance.

62. Access to on-line information retrieval would assist the work of the National Reference and Special Libraries Division. This Division, amongst other activities may be called upon to prepare specialized bibliographies including material drawn from sources other than those of the collections of BNLS. Consequently, the development of an easily searchable database of materials in the BNLS collection and the eventual development of a union catalogue of materials available within the library and information services of Botswana will assist their work. An additional benefit would accrue from the provision of access to external on-line databases available from hosts such as DIALOG. If, for the time being, BNLS could become a centre for on-line searching it would be of benefit to many of the smaller libraries and information centres which could not, of themselves, justify having such access. It would also build up a pool of expertise and encourage resource-sharing.

63. A project to encompass all of these suggestions should not be viewed as complete and entire. It would be quite wrong to suppose that the needs of BNLS, and of Botswana, can be satisfied in one attempt. Rather, this project should be viewed as a 'pump-priming' - something to begin with, to provide experience of the benefits and problems and, most importantly, something onto which further aspects of automation can be built, as needed. It is vital, then, that whatever financial provision is made by the Government it should not be regarded as one-off, but as the first of several projects which will require capital funding and provision for recurrent expenses.

64. The lack of experience of automation by staff at BNLS suggests that the purchase and installation of a 'turnkey' system from a specialist supplier of library systems is preferable to the initiation of a project to develop a 'tailor-made' system especially for BNLS. The latter could prove expensive and, since the requirements are similar to those of many other libraries, would not seem to offer any advantage. In addition, the purchase of an existing system means that the lengthy

processes of system design and testing have already been undertaken. Most suppliers of 'turnkey' systems are, in any case, willing and able to make adjustments to the operation of their systems through the selection of parameters appropriate to the needs of the purchasing library.

65. In selecting a supplier it is important that consideration be given to the ability of the supplier to offer adequate support for the installation, training of staff, maintenance of software and maintenance of hardware. A supplier already represented in Botswana would be ideal as would one working in Southern Africa. It is difficult to over-emphasize the importance of this, especially in relation to hardware maintenance. The ready availability of maintenance and repair expertise is vital, especially since the environmental conditions of Botswana are likely to place some strain on electronic equipment.

66. It is also important that the system selected be capable of expansion in both its capacity and range of processes. BNLS does not need, at this stage, a system offering a complete suite of library functions nor one that is capable of storing a large number of records. The present catalogue contains entries for about 68,850 titles, representing a bookstock of about 201,000 volumes. The rate of additions is about 2,500 a year. If 1000 characters is allowed for every record to store bibliographic and holdings information then a data store of 100 megabytes would be ample to store the complete catalogue and additions for about ten years. However, it is unlikely that complete retro-conversion of the catalogue will be undertaken so a substantially smaller data store will suffice. A store of 20 megabytes will be ample for the current proposals but the selected system must offer an easy upgrading route if full, or partial, retro-conversion is eventually agreed as the correct strategy or if the union catalogue proposal is implemented.

67. The system must also be capable of growth in two other directions. A minimum configuration for the present needs of the Bibliographic Services Division is four terminals, which would allow unlimited access by two cataloguers and the person responsible for acquisitions. The fourth terminal could then be shared for the work of inputting the entries for the National Bibliography and stock maintenance, such as withdrawals and reallocations. As the use of the system becomes familiar and throughput increases there will be a need to add extra terminals. In particular, it may be thought desirable to provide an OPAC terminal for use in the Gaborone City library. The system must be capable of supporting extra terminals, preferably through a local network, up to say, ten terminals. It must also be able to offer multi-tasking so that different terminals can be used concurrently for different processes. In this way it will be possible for the system to grow as the needs of the BNLS change.

68. The selection of a system similar to that already installed by the University of Botswana would offer additional advantages. Firstly it would mean that a source of experience with that system was close at hand. Secondly, the use of similar systems is likely to make the exchange of bibliographic data much easier.

69. Data conversion of records held by the State Library in Pretoria is an attractive idea as a potentially quick method of building a cooperative database. It is not possible to say, without considerable additional study, whether such a route is technically and economically feasible. If the Library of the University of Botswana decided to go ahead with its project to retro-convert its catalogue using such means then attention should be paid to their experience. A critical point will be the quality of the records and the need for additional editing to tailor them to local needs and add information about local holdings.

70. If a project is to be established the selection and training of a member of staff to be 'systems manager' is an important step. There needs to be someone, preferably with an understudy, who acts as the focal point for passing information to and from the supplier, noting and dealing with problems or summoning expert help and assisting in training. This person will also have an important role to play in suggesting how the system should be expanded and for what additional functions it should be used. Because this person will need to have a good knowledge of the activities of BNLS, its objectives and methods of working, it would be preferable for a member of the professional staff to be designated for this position. Annex 3 provides an outline job specification for a Systems Manager and some suggestions about training.

71. It is also important that attention be given to the need to train staff. Some training should be provided by the vendor but it is best if staff are selected to go on the training course who will be especially able to themselves act as trainers of others. Some initial familiarization will help, especially for those for whom the use of computers is entirely new. Suitable preliminary training sessions might be available from the Botswana Institute of Administration and Commerce - basic keyboard literacy and an introduction to word-processing, for example - and the Department of Library and Information Science of the University of Botswana might be able to offer introductory sessions on computer applications in libraries. Such training ought to be built in to the lead up to implementation rather than delaying it until a system is installed. In this way the interest of staff is aroused and enthusiasm is maintained even during the problems which are almost certain to occur during implementation.

72. It is difficult to offer suggestions about a suitable timetable for implementation because of uncertainty over two aspects of the development of BNLS. The first aspect of uncertainty is that offered by the ceilings imposed on the finances and staff establishment of BNLS. Until some relaxation of these, sufficient to provide additional resources for the recurrent needs of running an automated system, are agreed BNLS would be most unwise to initiate development. Secondly, it is understood that planning for a new building for the BNLS is a task included in the new National Development Plan (NDP VII) and that a site has been earmarked. It would clearly stretch the capacities of staff to absorb change too much to have both developments occurring close together or, even worse, concurrently. Until some agreement on the phasing of these developments has been achieved, BNLS would be unwise to proceed

with automation. Consequently, no specific recommendations about timetable have been made.

73. It is also difficult to offer advice on the budget estimates for this project because some matters, such as the price of hardware, will be affected by whether a system supplier can obtain equipment locally in Botswana or has to import from elsewhere in Southern Africa or further afield. Also, the decision as to whether to pursue the catalogue retro-conversion will have a major influence on overall costings. If the minimum configuration of four terminals, data store, acquisitions and cataloguing system is considered, together with the purchase of two additional microcomputers, printers and a modem for word-processing and online information retrieval, it should be possible to purchase and implement this package within the capital budget of 1 million Pulas. Some idea of the necessary capital budget and running expenses, based on local prices excluding taxes and discounts, is given below. It must be emphasized that this is for guidance only.

SCHEDULE OF COSTS (1 US$ = 2 Pulas)

Capital budget items		Pulas
Hardware	- Processor, 4 terminals, disc store	43,200
	- Uninterruptible power supply unit	3,000
	- 2 IBM-compatible microcomputers	6,000
	- 3 24-pin dot matrix printers	3,600
	- 1 modem	900
Software	- integrated, multi-user, library management package	33,000
	- network management	16,300
	- 2 copies of integrated word-processing, spreadsheet, database and communications package	2,700
Training	- up to five days for 5-6 people, on-site (travel and accommodation costs for the trainers must be added to this)	9,000
	- five days information technology awareness course, on site, for 5-6 people	18,000
Installation	- allow 2 days (travel and accommodation costs for the installers must be added to this)	4,500
Consultancy	- allow 5 days (travel and accommodation costs for the consultant must be added to this)	1,500
Contingencies	- allow	15,000
	Total capital costs	156,700

SCHEDULE OF COSTS (continued)

Recurrent expenses	Pulas
Hardware maintenance - allow 12½% of capital cost	7,100
Software maintenance - allow 12% of capital cost	6,300
Consumables (discs, stationery etc) - allow	3,000
Re-training, training of new staff - allow	3,000
Access to 'Help' desk of system supplier - allow	3,000
Contingencies - allow	3,000
Total recurrent costs	25,400

74. As far as other libraries in ministries and parastatal organizations are concerned it would be best for BNLS to recommend that they acquire a similar system to that used by BNLS itself. This reinforces the requirement that such a system should be modular and adds in the additional requirement that it should be possible to acquire it in single-user versions to enable it to be installed in some of the smaller libraries, should this be desired, and that these should be capable of being linked to a network if a cooperative database is considered necessary. This would have the additional advantage of allowing the transmission of messages via electronic mail around the network which could have a useful effect in encouraging cooperation and resource sharing.

75. BNLS should establish a forum within which discussions about, and planning for, resource sharing and cooperative use of bibliographic and other data can take place. Membership should include major institutions having libraries or information centres.

Conclusions and recommendations

76. BNLS would benefit from the introduction of automation, initially to facilitate the work of the Bibliographic Services Division and the production of the National Bibliography, word-processing for administration and online information retrieval for the National Reference and Special Libraries Division.

77. No project should be initiated until the provision of sufficient additional resources to cover the running expenses of an automated system has been agreed.

78. The purchase of a modular automated library system, initially offering acquisitions and cataloguing, and capable of being expanded from four terminals up to ten is recommended. The system should support multi-tasking and multi-user working.

79. The system to be implemented by the Library of the University of Botswana (TINLIB by IME) offers suitable facilities. It is available in

a modular form, and offers a development path which allows the system to grow from single-user to a multi-user, multi-tasking configuration with a network. The recommended hardware platform is ICL, which would be consonant with the purchasing strategy of the Government Computer Bureau. ICL has good facilities for supply and maintenance in Gaborone. It is recommended (subject to Item 68, above) that IME be considered with a view to supplying a system. It is also recommended that the system offered by McDonnell Douglas (URICA), which is strongly represented in Southern Africa, should also be considered. This system is also modular and capable of supporting a multi-user, multi-tasking, environment. It also offers a development path from the use of an IBM-compatible microcomputer to a minicomputer. Word-processing, spreadsheet and communications packages can also be run alongside library applications software.

80. Two additional microcomputers with associated printers, modem and suitable software should be purchased to facilitate word-processing and online information retrieval.

81. The system supplier should ideally have a permanent base in Botswana or Southern Africa and must be able to provide, or arrange, training, software maintenance and hardware maintenance.

82. A suitable professional librarian should be selected and trained as a 'Systems Manager' to manage and administer the project.

83. Close cooperation with the Library of the University of Botswana should be sought, especially with regard to their plans for retro-conversion of the catalogue.

84. Libraries in government departments and associated parastatal institutions should be encouraged to use similar systems to that chosen by BNLS.

85. A suitable forum for discussing the possibility of a cooperative venture in creating a union catalogue/shared database should be established by BNLS. Membership should include representatives from BNLS, the University of Botswana, the Botswana Polytechnic and other organizations having significant collections of library materials.

ANNEX 1

MISSION SCHEDULE

Monday 22 April	-	leave UK for Gaborone.
Tuesday 23 April	-	arrive at Gaborone. Meeting with senior staff of Botswana National Library Service to discuss Terms of Reference, methods of study, protocol and timetable. Contact United Nations Development Programme Office to inform them of my arrival.
Wednesday 24 April	-	General Staff Meeting to introduce the mission and explain procedure. Begin interviews of senior staff. Visit to the United Nations Development Programme Office to discuss domestic arrangements.
Thursday 25 April	-	Interviews of senior staff.
Friday 26 April	-	Interviews of senior staff. Plan short course for senior and middle management on computer applications in libraries
Saturday 27 April	-	Trip to Mochudi Public Library.
Sunday 28 April	-	Informal discussions with Chairman of the Board of BNLS.
Monday 29 April	-	Meeting with the Computer Coordination Committee of BNLS to discuss progress. Interviews of senior staff. Meeting at UNESCO National Commission Office, Gaborone, to discuss progress and the involvement of UNESCO in the project. Visit to British Council Offices, Gaborone, to borrow material for a short course.
Tuesday 30 April	-	Interview of Acting Director of BNLS to discuss strategic objectives and future of the Service. Study of workflow of Bibliographic Services Support Division. Interviews of senior staff.
Wednesday 1 May	-	Interviews of senior staff and continuing study of the workflow of Bibliographic Services Support Division.

Thursday 2 May	-	Visits to libraries of the Botswana Institute of Administration and Commerce and Botswana Polytechnic to discuss possibilities of automation. Interviews of senior staff.
Friday 3 May	-	Visits to libraries of the National Institute of Development Research and Documentation and the Botswana Technology Centre to discuss possibilities of automation. Visit to the library of the University of Botswana to discuss progress of their automation project. Discussion with staff of the Department of Library and Information Studies. Courtesy visit to the Permanent Secretary and the Under Secretary of the Ministry of Labour and Home Affairs of the Republic of Botswana.
Saturday 4 May	-	Analysis of findings.
Sunday 5 May	-	Preparation of oral report and position statement for meeting of Senior Management Team.
Monday 6 May	-	Meeting with Senior Management Team and Secretary of the UNESCO National Commission Office, to discuss strategic objectives for BNLS and the role of automation. Meeting with the Computer Manager of the Government Computer Bureau of the Ministry of Finance and Development Planning of the Republic of Botswana to discuss policy of the Government in relation to computer use and the role of the Bureau in relation to automation of BNLS activities. Dinner with Acting Director of BNLS.
Tuesday 7 May	-	Short course for senior and middle-management staff of BNLS on computer applications. Visit to library of Radio Botswana to discuss prospects for automation. Official lunch for senior members of BNLS, members of its Board and guests.
Wednesday 8 May	-	Interim Review of findings and discussion of possible contents of Final Report. Visit to the library of Molepolole College of Education and Molepolole Public Library.
Thursday 9 May	-	Public holiday in Botswana. Leave Gaborone for UK
Friday 10 May	-	Travel in UK

ANNEX 2

LIST OF PERSONS CONSULTED

Botswana National Library Service

Mrs. Constance MODISE - Acting Director
Professor Peter HAVARD-WILLIAMS - Chairman of the National Library Service Board

Bibliographic Support Services Division

Mrs. Nini DINTWE - Acting Head of Division
Ms. Tlhamelo KALANTLE - Cataloguer
Mrs. Lenore LEE - Cataloguer

Educational Libraries Division

Mrs. Margaret Baffour AWUAH - Head of Division

National Reference and Special Libraries Division

Ms. Gertrude Kayaga MULINDWA - Head of Division
Mr. Shepherd Modisakgotla RAMOLEKO

Public Libraries Division

Mr. Mac ATUBRA - Head of Division

Research and Publications

Mr. Wilberforce MUSOKE

Training Division

Miss Margaret WAMULWANGE

Mochudi Public Library

Library Assistant

Molepolole College of Education

Library Assistant

Molepolole Public Library

Library Assistant

Botswana Institute of Administration and Commerce

Mr. William BAFFOR - Manager of Computer Services
Ms. Gabonya RAMMIDI - Librarian

Botswana Polytechnic

Mr. S. KANJII - Librarian

Botswana Technology Centre

Ms. MASEAS - Librarian
Ms. Brenda KEBOLANONG
Ms. M. PILANE

British Council

Ms. Jane WATERMAN - Education Officer

Ministry of Finance and Development Planning

Government Computer Bureau

Mr. M. L. MOTLHATLHEDI - Computer Manager
Mr. Andrew DUNCAN

Ministry of Labour and Home Affairs

Mr. K. M. MASOGO - Permanent Secretary
Mr. Basiamang H. GAREBAKWENA - Under Secretary and Substantive Director of the Botswana National Library Service
Mrs. T. M. LEKAUKAU - Director of Botswana National Archives

National Commission for UNESCO

Mrs. SEISA - Secretary

National Institute of Development Research and Documentation

Ms. MOAGI - Librarian

Radio Botswana

Mr. Bishy MMUSI - Producer
Mr. Sultan HAIDER - Librarian

United Nations Development Programme, Gaborone Office

Ms. Maja KONONEN - Liaison Officer

University of Botswana

Mrs. H. Kay RASEROKA - Librarian of the University
Ms. Chedza JACKALASE - Systems Librarian
Mr. Richard NEILL - Department of Library and Information Studies

ANNEX 3

Job specification for a Systems Manager

This is an outline specification covering, in particular, activities of direct relevance to a computer system in BNLS. Additional activities could be added if it is thought best for this role to be combined with other professional duties.

Within the Departmental structure, to direct and take responsibility for:

1) day-to-day provision of computing services comprising any combination of real-time, batch and, if appropriate, network operations;

2) operation of any internal data communications network (if fitted) and connections to any external data communications network;

3) short-term and medium-term planning, scheduling and control of development work on the system;

4) application of security, recovery and re-start procedures including the upkeep of physical media such as discs;

5) operator training and production of operating manuals relating to local procedures;

6) ensuring equipment is properly maintained according to the contract with the supplier and that repairs are speedily and effectively carried out. Reviewing failure reports and investigating special problems; liaising with suppliers representatives and engineers to reduce delays or deficiencies in the service provided;

7) maintaining a thorough knowledge of all procedures used in the system and acting as a source of reference on systems operation;

8) to report regularly to senior management on the efficiency and effectiveness of the computing service.

Training in the operation of the system, including operating systems, applications software, operation of hardware and networks (if applicable) should be provided by the system supplier. Preliminary training and familiarization will speed up the acquisition of such knowledge and will give the designated person more confidence. Therefore it is suggested that the 'Skill builder' series of training packs, together with the Information Technology Training Package, both offered by the National Computing Centre in the United Kingdom, be investigated for suitability.